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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/684,222

Applicant(s)

DEVANTIER ET AL.

Examiner

DISLER PAUL

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8;10-15;17-23;25-32;34-35;37-49;52-74;76-89;91-113;117-135 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8;10-15;17-23;25-32;34-35;37-49;52-74;76-89;91-113;117-135 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The applicant's amended claims as in (1, 15, 25, 27, 62, 81, 107, 111) in regard to the method comprising: "where the transfer functions includes either or both an amplitude component or phase component" have been analyzed and rejected over prior art.

It is noted that the prior art of record as in Rabinowitz et al. does disclose of such system comprising: "where the transfer functions includes either or both an amplitude component or phase component" (fig.4 (48, 52); fig.5 (19); par [0030, 0028]/the transfer function or frequency response does have an appropriate amplitude component).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8; 10; 14-15; 17-20; 25; 27-30; 32; 34-35; 37-44; 46-49; 52-53; 62-66; 68-73; 76-77; 81 -87; 96; 98-99; 101; 107-109; 111-113; 117; 119 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabinowitz et al. (2003/0179891) and Tagami et al. (US 5,745,586).

Re claim 1, Rabinowitz et al. disclose an audio system comprising a configuration, the configuration selected based on a method

comprising: generating acoustic signals from at least one loudspeaker placed at potential loudspeaker locations and recording transfer functions at a plurality of listening positions (fig.1,5 (14,16); fig.3 (20); par [0010,0021; 0027]/the system include a microphone and speakers in various locations for generating acoustic signals and the microphone to pick up such generated sound from the various listening locations); and where the transfer functions includes either or both an amplitude component or a phase component (fig.4 (48, 52); fig.5 (19); par [0030, 0028]/the transfer function or frequency response does have an appropriate amplitude component); determining potential configurations of the audio system (fig.5 (14-1; 14-n); fig.34 (43); par [0020, 0022, 0029; 0033]/the system include a potential loudspeaker configuration in the room *as in alterations of the speakers, and replacing components and also volume and tone control configuration*) and modifying the transfer functions based on the potential configurations so that predicted transfer functions are generated at each of at least two of the plurality of listening positions for each of the potential configuration of the audio system, the predicted transfer function representing simulations for the potential configuration of the audio system (fig.1 (18, 20); fig.4(48-59); par [0021-0023,0027]/the system include providing certain equalized frequency for different user locations with microphone from the loudspeaker is read on the predicted transfer function).

Although, Rabinowitz et al. disclose of having the predicted transfer function, However, Rabinowitz et al. never disclose of such accessing a criterion by which to statistically analyze the predicted signal. But, Tagami et al. disclose of a system wherein the similar concept of accessing a criterion by which to statistically analyze a predicted signal (fig.3-4; col.7 line 50-67; col.8 line 17-53/the equalized audio function is analyzed using variations of criterion as noted in the figures) so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the prior art with implementing such accessing a criterion by which to statistically analyze the predicted signal so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span.

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, would have further teach of such statistically analyzing using the criterion across at least one frequency of the predicted transfer functions for the at least two of the plurality of listening positions (fig.3-5/to analyzed across many frequencies).

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, would have further teach of such selecting a configuration to further including such specific as in selecting a configuration to

improve for the criterion at the at least two of the plurality of listening positions based on the statistical analysis (par [0033]/the configuration being selected include the speaker change and remodeling configuration and replacing component).

Re claim 2, The audio system of claim 1, where the configuration comprises at least one parameter that affects acoustical performance of the audio system (par [0029, 0033]/parameter as in volume and tone control) ; where determining potential configurations comprises determining potential values for the parameter (par [0029]) and where modifying the transfer functions comprises modifying the transfer functions based on the potential values for the parameter; and where selecting a configuration comprises selecting a value for the parameter (fig.4 (48, 52); par [0029; 0033]/speakers adjustment and volume control in modifying the transfer function).

Re claim 3, the audio system of claim 2, wherein determining potential values for the parameter comprises to input potential values for the parameter (fig.4 (48, 52); par [0029]).

Re claim 4, the audio system of claim 2, where the configuration comprises at least two parameters that affect acoustical performance of the audio system; and where determining potential configurations of the audio system comprise determining potential combinations of potential values of the parameters (fig.4 (48, 52); par [0029; 0033]/speakers with replacing the and volume and tone control).

Re claim 5, the audio system of claim 2, where the parameter is selected from the group consisting of positions of the loudspeakers, number of loudspeakers, types of loudspeakers, and correction factors (par [0029; 0033]).

Re claim 6, the audio system of claim 2, where the parameter comprises positions of the loudspeakers; and where determining potential configurations comprises: determining potential positions of the loudspeakers (par [0021; 0029]/equalization with change of speakers position); and generating potential combinations of speakers based on the potential positions of the loudspeakers; and where modifying the transfer functions comprises super-positioning of the transfer functions based on the potential combinations of speakers (fig.4 (54); par [0031; 0033]/speakers positions may be combined).

RE claim 7, the audio system of claim 6, where the at least one parameter further comprises correction factors; and where the potential configurations are based on the potential combinations of speakers and the potential values for the correction factors (fig.3; fig.4 (48, 52); par [0029, 0033]/tone and volume parameter).

Re claim 8, the audio system of claim 1, where recording transfer functions at a plurality of listening positions comprises placing a microphone at each of the listening positions and recording the transfer functions (fig.3; par [0026,0036]/microphones for listening positions).

RE claim 10, the audio system of claim 9, wherein having plurality of frequencies as desired -(fig.3; par [0029]).

Similarly, it would have been obvious for one of the ordinary skills in the art to have modified such frequencies as further including such frequencies as being less than 120 Hz with producing no unexpected result based on the designer's need.

RE claim 14, the audio system of claim 1, wherein selecting a configuration comprises recommending a plurality of potential configurations and manually selecting one of the plurality of potential configurations (par [0029]/to manually select the volume and tone configurations).

Similarly, it would have been obvious for one of the ordinary skills in the art to have tried in modifying such recommending such configuration as further include such automatically recommending the configuration so as to determined the equalized pattern without a user input.

RE claim 15, Rabinowitz et al. disclose of a machine readable medium having software for causing a machine to execute a method, the machine readable medium comprising: instructions for generating acoustic signals from at least one loudspeaker placed at potential loudspeaker locations; instructions for recording transfer functions for the generated acoustic signals at a plurality of listening positions (fig.1,5 (14,16); par [0010,0021]); where the transfer functions includes either or both an amplitude component or a phase component (fig.4 (48, 52); fig.5 (19); par [0030, 0028])/the

transfer function or frequency response does have an appropriate amplitude component); instructions for determining potential configurations of the audio system (fig.5 (14-1; 14-n); par [0020, 0022, 0029; 0033]/potential loudspeaker configuration in the room as in alterations of the speakers, and replacing components and also volume and ton control configuration); instructions for modifying the transfer functions based on the potential configurations so that predicted transfer functions are generated at each of at least two of the plurality of listening positions for each of the potential configuration of the audio system, the predicted transfer functions representing simulations for the potential configurations of the audio system (fig.1 (18, 20); fig.4(48-59); par [0021-0023,0027]/desired equalized frequency for different user locations in determining the predicted transfer function).

While, Rabinowitz disclose of having the predicted transfer function, however, Rabinowitz et al. fail to disclose of such instructions for accessing a criterion by which to statistically analyze the predicted audio functions. But, Tagami et al. disclose of a system wherein the similar concept of having instructions for accessing a criterion by which to statistically analyze the predicted audio functions (fig.3-4; col.7 line 50-67; col.8 line 17-53/the equalized audio function is analyzed using variations of criterion as noted in the figures) so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span. Thus, it would have been obvious for one of the ordinary skill in the art to have

modified the prior art with implementing such instructions for accessing a criterion by which to statistically analyze the predicted audio functions so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span.

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, would have further teach of such instructions for statistically analyzing using the criterion across at least one frequency of the predicted transfer functions for the at least two of the plurality of listening positions (fig.3-5).

Re claims 17-18, 20 have been analyzed and rejected with respect to claims 3-4, 10.

Re claim 19, the machine readable medium of claim 15, where the statistical analysis is across a plurality of frequencies of the predicted transfer functions (Tagami; fig.3-5)

Re claim 25, Rabinowitz et al. disclose of a computer system for analyzing potential configurations in an audio system, the computer system comprising: a memory storing transfer functions recorded at a plurality of listening positions in the audio system (fig.5 (20); par [0020]), and a processor in communication with the memory the processor (fig.1 (20, 18); determining potential configurations of

the audio system (fig.5 (14-1; 14-n); par [0020, 0022, 0029; 0033]/potential loudspeaker configuration in the room as in alterations of the speakers, and replacing components and also volume and ton control configuration); and modifying the transfer functions based on the potential configurations so that predicted transfer functions are generated at each of at least two of the plurality of listening positions for each of the potential configurations of the audio system, the predicted transfer function representing simulation for the potential configuration of the audio system (fig.1 (18, 20); fig.4(48-59); par [0021-0023,0027]/desired equalized frequency for different user locations in determining the predicted transfer function) where the transfer functions includes either or both an amplitude component or a phase component (fig.4 (48, 52); fig.5 (19); par [0030, 0028]/the transfer function or frequency response does have an appropriate amplitude component).

While, Rabinowitz disclose of having the predicted transfer function, however, Rabinowitz et al. fail to disclose of such accessing a criterion by which to statistically analyze the predicted audio functions. But, Tagami et al. disclose of a system wherein the similar concept of accessing a criterion by which to statistically analyze the predicted audio functions (fig.3-4; col.7 line 50-67; col.8 line 17-53/the equalized transfer function is analyzed using variations of criterion as noted in the figures) so as to easily enable a listener to determine how to adjust the equalizer in

obtaining desired sound quality in short-time span. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the prior art with implementing such accessing a criterion by which to statistically analyze the predicted audio functions so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span.

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, would have further teach of such statistically analyzing using the criterion across at least one frequency of the predicted transfer functions for the at least two of the plurality of listening positions (fig.3-5/analyzed across plurality of frequency).

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, would have further teach of such recommending at least one of the potential configurations to improve for the criterion at the at least two of the plurality of listening positions based on the statistical analysis (par [0033]/speaker changes and remodeling configuration and replacing component in doing the equalization patterns).

Re claim 27, the method for selecting a configuration for an audio system, the method comprising: recording transfer functions using at least an audio sensor at a plurality of listening positions in the

audio system; determining potential configurations of the audio system; modifying the transfer functions where the transfer functions includes either or both an amplitude component or a phase component, using at least one processor, based on the potential configurations so that predicted transfer functions are generated at least two of the plurality of listening positions for each of the potential configurations of the audio system, the predicted transfer functions representing simulations for the potential configurations of the audio system; accessing a criterion from a memory by which to statistically analyze the predicted transfer functions; statistically analyzing, using the at least one processor, the predicted transfer functions using the criterion at the at least two of the plurality of listening positions; and selecting a configuration to improve for the criterion at the at least two of the plurality of listening positions based on the statistical analysis (see claim 1 rejection analysis).

Re claims 28-29 have been analyzed and rejected with respect to claims 2, 5.

Re claim 30, the method of claim 27, wherein the transfer functions measure at least one acoustical property of the audio system (par [0027]/equalization acoustic property).

Re claim 32, the method of claim 27, where the audio system comprises a subwoofer (par [0022]).

Re claim 34, the method of claim 27, where the configuration comprises potential loudspeaker locations; where recording transfer functions comprises generating acoustic signals from the loudspeaker placed at each of the potential loudspeaker locations (fig.1 (14); fig.3).

Similarly, the combined teaching of the combined teaching of Rabinowitz et al. and Tagami et al. as a whole, further teach of being able to select a configuration based on the statistical analysis comprises selecting potential location for placement of the loudspeakers in the audio system (par [0033]).

Thus, it would have been obvious for one of the ordinary skills in the art to have tried in modifying such selecting configuration as further including such wherein selecting a configuration based on the statistical analysis comprises selecting less than all of the potential loudspeaker locations for placement of loudspeakers in the audio system so as to determined the equalization patterns for such change of configurations.

Re claim 35, the method of claim 34, where generating acoustic signals from the loudspeaker placed at each of the potential loudspeaker locations comprises placing the loudspeaker at a first potential position and controlling the audio system to generate an acoustic signal; and where recording transfer functions at the plurality of listening positions comprises placing a microphone at a first listening position and recording

the acoustic signal and placing the microphone at a second listening position and recording the acoustic signal (fig.3; par [0024, 0031, 0033]).

Re claim 37, the method of claim 28, wherein determining potential values for the parameter comprises selecting a discrete number of potential configurations (par [0029;0033]).

Re claim 38, the method of claim 28, wherein determining potential values for the parameter comprises selecting a range of potential values (fig.4 (48, 52);par [0029; 0033]).

RE claim 39; the method of claim 28, where the parameter comprises loudspeaker locations; where recording transfer functions comprises recording transfer functions at the listening positions with the loudspeaker in each of the plurality of potential loudspeaker locations; where determining potential configurations comprises inputting a plurality of potential loudspeaker locations and determining potential combinations of the potential loudspeaker locations; and where modifying the transfer functions comprises combining the transfer functions for the listening positions for each of the potential combinations of loudspeaker locations to generate the predicted transfer functions (fig.3; par [0029; 0033]).

Re claim 40, the method of claim 39, where the plurality of loudspeaker locations comprises a first potential loudspeaker location and a second potential loudspeaker location; where recording transfer functions comprises: recording a first transfer function at a first listening position with the loudspeaker at the first potential loudspeaker location; recording a second transfer function at the first listening position with the loudspeaker at the second potential loudspeaker location (fig.1 (14) ; fig.3; par [0033]record transfer functions at varying speaker locations) and recording a third transfer function at a second listening position with the loudspeaker at the first potential loudspeaker location; and recording a fourth transfer function at the second listening position with the loudspeaker at the second potential loudspeaker location (fig.1 (14) ; fig.3; par [0033]record transfer functions at varying speaker locations) and combining the transfer function comprises: combining the transfer functions (par [0031]/all data may be combined).

Similarly, it would have been obvious for one of the ordinary skills in the art to have such combined data as additionally including combining the first transfer function and the second transfer function; and combining the third transfer function and the fourth transfer function so as to create the equalize patterns.

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, would have further disclosed of such where statistically

analyzing the predicted transfer functions is based on the first transfer function, the second transfer function, the third transfer function, the fourth transfer function, the combined first and second transfer function and the combined third and fourth transfer function (fig.4 54); par [0031]/all data may be combined).

Re claim 41, the method of claim 40, where combining the first transfer function and the second transfer function comprises performing superposition of the first transfer function with the second transfer function; and where combining the third transfer function and the fourth transfer function comprises performing superposition of the third transfer function with the fourth transfer function (fig.3-4 (56); par [0031]/transfer functions at different positions may be combined).

Re claim 42; the method of claim 27, where the configuration comprises number of loudspeakers and where potential configurations comprise potential numbers of loudspeakers (fig.1 (14-n); par [0033]/plurality of speakers) and where modifying the transfer functions based on the potential configurations comprises determining potential combinations of loudspeakers at potential loudspeaker locations; the potential combinations being equal to at least one of the potential number of loudspeakers (fig.1 (14-6); par [0021]/modifying transfer function based on the potential number of speakers) and combining the transfer

functions for each of the potential combinations to generate predicted transfer functions for each of the potential combinations (par [0031]/transfer function may be combined in determining the predicted transfer function).

Since, the combined teaching of Rabinowitz et al. and Tagami et al. as a whole, further disclose of wherein selecting one of the potential numbers of speakers for the predicted transfer function (par [0033]/replacing speaker component or moving speakers). Thus, it would have been obvious for one of the ordinary skills in the art to have tried in modifying the selecting number of speakers with additionally having such specific as in selecting one of the potential numbers of speakers based on the statistical analysis so as to similarly realize a desired sound quality within a short time span.

RE claim 43, the method of claim 28, where the parameter comprises types of loudspeakers (par [0021]/the different type of loudspeakers as in subwoofer and high and cross over loudspeakers); where determining potential configurations comprises determining combinations of potential types of loudspeakers at potential loudspeaker locations (fig.3 (20); par [0027,0021]/different position and having such different type of speakers); where recording transfer functions comprises recording transfer functions at the listening positions with each potential type of loudspeaker in each of the plurality of potential loudspeaker locations (fig.3 (3)); fig.2; par

[0036]/recording such transfer function at different location); and where modifying the transfer functions based on the potential configurations comprises combining the transfer functions for the listening positions for each of the combinations to generate predicted transfer functions (par [0031]/transfer function may be combined in determining the predicted transfer function).

Re claim 44, the method of claim 43, wherein the types of loudspeakers comprises loudspeakers with different qualities (par [0021, 0027]).

Re claim 46, the method of claim 27, where the configuration comprises correction factors; where potential configurations comprise potential values for the correction factors; and where modifying the transfer functions based on the potential configurations comprises modifying the transfer functions for potential values for the correction factors to generate predicted transfer functions for each of the potential values (fig.3; fig.4 (48,52); par [0029]).

Re claim 47, the method of claim 46, where the correction factors comprise gain, delay, and equalization (par [0029]; fig.3/gain and tone inherently correct for frequency equalization and time varying delay signal).

Re claim 48, the method of claim 27, where the configuration

comprises a plurality of parameters; where determining potential configurations comprises determining potential values for the plurality of parameters and determining potential combinations of the potential values of the parameters; where recording transfer functions comprises recording transfer functions at the listening positions with each type of potential loudspeaker in each of a plurality of potential loudspeaker locations; and where modifying the transfer functions based on the potential configurations comprises modifying the transfer functions based on the potential combinations to generate predicted transfer functions (fig.3; fig.4 (48,52); par [0029, 0033]/using multiple configurations and at plurality of listening positions and modified to determine the predicted function).

Re claim 52, the method of claim 27, where statistically analyzing the predicted transfer functions comprises analyzing the predicted transfer functions for each of the plurality of listening positions (fig.3 (20); par [0027]).

Re claim 49 has been analyzed and rejected in regard to claim 10.

Re claim 53; The method of claim 27, where the statistical analysis indicates consistency of the predicted transfer functions across the plurality of listening positions (col.7 line 55-60; fig.3/sound with adjective such as neutral as sound quality adjective).

Re claim 62, Rabinowitz et al. of a method for selecting a configuration for an audio system, the method comprising: recording transfer functions a plurality of listening positions in the audio system (fig. 3; fig.5 (16)); where the transfer functions includes either or both an amplitude component or a phase component (fig.4 (48, 52); fig.5 (19); par [0030, 0028]/the transfer function or frequency response does have an appropriate amplitude component); determining potential configurations of the audio system (fig.5 (14-1; 14-n); par [0020, 0022, 0029; 0033]/potential loudspeaker configuration in the room as in alterations of the speakers, and replacing components and also volume and ton control configuration); modifying the transfer functions based on the potential configurations in order to generate so that predicted transfer functions are generated at each of at least two of the plurality of listening positions for each of the potential configurations of the audio system, the predicted transfer functions representing simulations for the potential configurations of the audio system fig.1 (18, 20); fig.4(48-59); par [0021-0023,0027]/desired equalized frequency for different user locations with microphone from the speaker is read on the predicted transfer function).

However, Rabinowitz et al. fail to disclose of such wherein accessing a criterion comprising efficiency by which to statistically analyze the predicted transfer functions. But, Tagami et al. disclose of a system wherein the similar concept of accessing a criterion comprising

efficiency by which to statistically analyze a predicted audio functions signal (fig.3-4; col.7 line 50-67; col.8 line 17-53/the equalized audio function is analyzed using variations of efficiency criterion as noted in the figures) so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the prior art with implementing such accessing an efficiency criterion by which to statistically analyze the predicted transfer functions as in Robinowitz so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span.

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, wherein statistically analyzing the predicted transfer functions using the criterion (Tagami; fig.3-5); and selecting a configuration based on the statistical analysis to improve for the efficiency at the at least two of the plurality of listening positions (par [0033]/different configurations may be used in improving the predicted function and thus the criterion), and where the statistical analysis indicates efficiency of the predicted transfer functions at the plurality of listening positions (fig.3; par [0027]/functions at plurality of listening positions).

Re claim 63, the method of claim 62, where efficiency is examined for predetermined frequencies (tagami; fig.4-5).

Re claim 64, the method of claim 63, where selecting a configuration based on the statistical analysis comprises selecting a value for a parameter to increase efficiency of the audio system in the predetermined frequencies (fig.4 (43); par [0029]/audio and tone control may be used and inherently will increase the audio signal efficiency).

Re claim 65, the method of claim 64, wherein the parameter comprises a volume correction and wherein selecting a value to increase efficiency comprises selecting a value that decreases the volume of at least one of the loudspeakers in the audio system (fig.4 (43); par [0029]/volume and tone control of the audio signal).

Re claim 66, the method of claim 27, wherein the statistical analysis comprises an acoustic efficiency (Tagami; fig.4-5/sound quality).

Re claim 68, the method of claim 66, where selecting a configuration based on the statistical analysis comprises selecting a value for a parameter to increase acoustic efficiency of the audio system (fig.4 (43); par [0029]/volume and tone control of the audio signal and inherently will help to increase acoustic level).

RE claim 69, the method of claim 68, wherein the parameter comprises volume Correction and wherein selecting a value to increase acoustic efficiency comprises selecting a value that decreases the volume of at least one of the loudspeakers in the audio system (fig.4 (43); par [0029]/volume and tone control of the audio signal level).

Re claim 70, the method of claim 27, wherein the statistical analysis indicates output of predicted transfer functions at the multiple listening positions (fig.3 (20); par [0027]/the different positions).

Re claim 71, the method of claim 70, where output is examined for Pre-determined frequencies (fig.4-5/audio signal may be measured at predetermined frequencies).

Re claim 72, the method of claim 71, where selecting a configuration based on the statistical analysis comprises selecting a value for a parameter to increase output of the audio system in the predetermined frequencies (fig.4 (43); par [0029]/volume and tone control of the audio signal).

Re claim 73, the method of claim 72, wherein the parameter comprises volume Correction and wherein selecting a value to increase output comprises selecting a value that decreases the volume of at least one of the loudspeakers in the audio system (fig.4 (43); par [0029]).

RE claim 76, the method of claim 27, where selecting a configuration comprises manually selecting a configuration (par [0022]/the control may be located on the head unit for manual adjustment).

Re claim 77, the method of claim 27, where selecting a configuration comprises selecting a configuration (par [0022]), However, the combined teaching of teaching of Rabinowitz et al. and Tagami et al. as a whole, failed to disclose of the automatic configuration. But, it is noted the

concept of having the configuration as being automatic is merely an obvious variation of the engineering design with producing no unexpected result.

Re claim 81, Rabinowitz et al. a machine readable medium having software for causing a machine to execute a method, the machine readable medium comprising: instructions for storing transfer functions recorded at a plurality of listening positions in an audio system (fig.3; par [0027]); where the transfer functions includes either or both an amplitude component or a phase component (fig.4 (48, 52); fig.5 (19); par [0030, 0028]/the transfer function or frequency response does have an appropriate amplitude component); instructions for determining potential configurations for the audio system (fig.5 (14-1; 14-n); fig.34 (43); par [0020, 0022, 0029; 0033]); instructions for modifying the transfer functions based on the potential configurations so that predicted transfer functions are generated at at least two of the plurality of listening positions, the predicted transfer functions representing simulations for the potential configurations of the audio system (fig.1 (18, 20); fig.4(48-59); par [0021-0023,0027]/desired equalized frequency for different user locations with microphone from the speaker is read on the predicted transfer function).

But, Rabinowitz et al. fail to disclose of accessing a criterion by which to statistically analyze the predicted transfer functions. But, Tagami et al. disclose of a system wherein the similar concept of accessing a criterion by which to statistically analyze the predicted audio functions (fig.3-4; col.7 line 50-67; col.8 line 17-53/the equalized audio

function is analyzed using variations of efficiency criterion as noted in the figures) so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the prior art with implementing such accessing a criterion by which to statistically analyze the predicted transfer functions as in Robinowitz so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span.

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, further disclose of such instructions for statistically analyzing the predicted transfer functions using the criterion at the at least two of the plurality of listening positions (fig.3; par [0027]/may be analyzed at plurality of listening positions).

Re claim 82, the machine readable medium of claim 81, where the instructions for determining potential configurations comprise instructions for receiving input for potential values of parameters for the audio system (par [0029]).

Re claim 83, the machine readable medium of claim 81, where the potential configurations comprise a plurality of potential loudspeaker locations and where the transfer functions are recorded with the loudspeaker in each of the

plurality of potential loudspeaker locations (fig.3; par [0033]); where the instructions for determining potential configurations for the audio system comprise instructions for determining potential combinations of the potential loudspeaker locations (fig.4 (54); par [0031]; and where the instructions for modifying the transfer functions based on the potential configurations comprise instructions for combining the transfer functions for the listening positions for each of the potential combinations of loudspeaker locations to generate predicted transfer functions (par [0031]).

Re claim 84, the machine readable medium of claim 81, where the potential configurations comprise potential values for the correction factors and wherein the instructions for modifying the transfer functions based on the potential configurations comprise instructions for modifying the transfer functions for potential values for the correction factors to generate predicted transfer functions for each of the potential values (fig.4 (43-44); par [0029]).

Re claim 85, the machine readable medium of claim 84, where the correction factors comprise gain, delay, and equalization (par [0029]; fig.3/gain and time varying delay signal).

Re claim 86, the machine readable medium of claim 81, where the configuration comprises a plurality of parameters; where the instructions for determining potential configurations comprise instructions for inputting potential values for the plurality of parameters and instructions for determining potential combinations of the potential values of the parameters; where the instructions for recording transfer functions comprise instructions for

recording transfer functions at each of the plurality of listening positions with each type of potential loudspeaker in each of a plurality of potential loudspeaker locations; and where the instructions for modifying the transfer functions based on the potential configurations comprise instructions for modifying the transfer functions based on the potential combinations to generate predicted transfer functions for the potential combinations (fig.3 (20); fig.4 (58-59)).

Re claim 87 has been analyzed and rejected with respect to claim 10.

Re claim 96, the machine readable medium of claim 81, wherein the statistical analysis indicates differences in overall sound pressure level among the plurality of listening positions for the predicted transfer functions (par [0031]).

Re claim 98, the machine readable medium of claim 81, where the statistical analysis indicates efficiency of the predicted transfer functions at the plurality of listening positions (Tagami; fig.4-5/to indicate the efficiency).

Re claim 99; the machine readable medium of claim 81, where the statistical analysis comprises acoustic efficiency (fig.4-5/sound quality).

Re claim 101, wherein the machine readable medium of claim 81, wherein further comprising having the instructions for recommending at least one of the potential configurations (par [0029]).

Re claim 107, Rabinowitz et al. disclose of an audio system comprising at least one loudspeaker and a plurality of listening positions, a system for analyzing potential configurations comprising: means for storing transfer functions recorded at a plurality of listening positions (fig.1 (20)); where the transfer functions includes either or both an amplitude component or a phase component (fig.4 (48, 52); fig.5 (19); par [0030, 0028]/the transfer function or frequency response does have an appropriate amplitude component); means for determining potential configurations for the audio system (fig.1 (22,26); par [0029]) and means for modifying the transfer functions based on the potential configurations so that predicted transfer functions are generated at at least two of the plurality of listening positions, the predicted transfer functions representing simulations for the potential configurations of the audio system (fig.1 (18, 20); fig.4(48-59); par [0021-0023,0027]/desired equalized frequency for different user locations with microphone from the speaker is read on the predicted transfer function).

However, Rabinowitz et al. fail to disclose of such means for accessing a criterion by which to statistically analyze the predicted transfer functions. But, Tagami et al. disclose of a system wherein the similar concept of means for accessing a criterion by which to statistically analyze the predicted audio functions (fig.3-4; col.7 line 50-67; col.8 line 17-53/the equalized audio function is analyzed using variations of criterion as noted in the figures) so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound

quality in short-time span. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the prior art with implementing such means for accessing a criterion by which to statistically analyze the predicted transfer functions so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span.

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, further disclose such means for statistically analyzing the predicted transfer functions using the criterion at the at least two of the plurality of listening positions (fig.3/plurality of listening positions for analysis).

Re claim 108, the system of claim 107, where means for recording potential configurations for the audio system comprises means for recording parameters for the configurations, the parameters selected from the group consisting of positions of the loudspeakers, number of loudspeakers, types of loudspeakers, and correction factors (par [0029, 0033]).

Re claim 109, the system of claim 107, where means for statistically analyzing comprises means for analyzing the predicted transfer functions across the plurality of listening positions (fig.3).

Re claim 111, the audio system comprising at least one loudspeaker and a plurality of listening positions, a system for analyzing potential

configurations comprising: storage means for storing transfer functions recorded at the plurality of listening positions, where the transfer functions includes either or both an amplitude component or a phase component; and processor means for determining potential configurations for the audio system, for modifying the transfer functions based on the potential configurations so that predicted transfer functions are generated at each of the plurality of listening positions, the predicted transfer functions representing simulations for the potential configurations of the audio system, for accessing a criterion by which to statistically analyze the predicted transfer functions, and for statistically analyzing the predicted transfer functions using the criterion (see claim 107 rejection analysis).

Re claim 112, the system of claim 111, the combined teaching of Rabinowitz et al. and Tagami et al. as a whole, as modified further disclose of wherein the processor means further recommends at least one of the potential configurations based on the statistical analysis (par [0029]/volume with statistical analysis).

Re claim 113, the system of claim 111, where the statistical analysis is across at least one frequency of the predicted transfer functions (fig.4-5).

Re claim 117, the audio system of claim 1, wherein statistically analyzing the predicted transfer functions at the plurality of listening positions comprises: analyzing for a first configuration a first predicted transfer function at a first listening position and a second predicted transfer function at a second listening position for at least one the criterion (fig.3

(20); par [0027; 0029, 0033]/analyzed multiple transfer functions at plurality of listening positions and having selected configurations) and analyzing for a second configuration a third predicted transfer function at the first listening position and a fourth predicted transfer function at the second listening position for the at least one criterion (fig.3 (20); par [0027, 0029, 0033]) and selecting a configuration (par [0029, 0033]/many configuration may be chosen).

Thus, it would have been obvious for one of the ordinary skills in the art to have tried in modifying such options in selecting configurations as further including such selecting a configuration based on the statistical analysis comprises selecting one of the first configuration or second configuration based on the analysis of the criterion for the first configuration and second configuration with producing no unexpected result when determining the desired equalized pattern signal.

RE claim 119 has been analyzed and rejected similarly in view of claim 117.

4. Claims 11-13; 21-23; 26; 54-61; 74; 78-80; 91-95; 97; 100; 102-104; 110; 118; 120-135 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabinowitz et al. (2003/0179891) and Tagami et al. (US 5,745,586).

Re claim 11, the audio system of claim 1, wherein the statistical analysis is selected from the group consisting of mean variance, standard deviation (fig.4; col.7 line 34-41; col.10 line 25-30; col.14

line 10-20/from the plurality of input sound, statistical analysis is made which consist of mean variance and standard deviation).

Similarly, it would have been obvious for one of the ordinary skill in the art to have tried in modifying such standard deviation and variance as further including such a mean spatial standard and spatial variance deviation for the same benefit so as to determine the average value and variance value for the respective speaker position in determining the sound quality value.

Re claim 54, Rabinowitz et al. disclose of a method for selecting a configuration for an audio system, the method comprising: recording transfer functions a plurality of listening positions in the audio system where the transfer functions includes either or both an amplitude component or a phase component (fig.4 (48, 52); fig.5 (16; 19); par [0030, 0027-0028]/the transfer function or frequency response does have an appropriate amplitude component); determining potential configurations of the audio system (fig.5 (14-1; 14-n); fig.34 (43); par [0020, 0022, 0029; 0033]/the system include a potential loudspeaker configuration in the room *as in alterations of the speakers, and replacing components and also volume and tone control configuration*); modifying the transfer functions based on the potential configurations so that predicted transfer functions are generated at each of at least two of the plurality of listening positions for each of the potential configurations of the audio system, the predicted transfer functions representing simulations for the potential

configurations of the audio system (fig.1 (18, 20); fig.4(48-59); par [0021-0023,0027]/the system include providing certain equalized frequency for different user locations with microphone from the loudspeaker is read on the predicted transfer function).

Although, Rabinowitz et al. disclose of having the predicted transfer function, However, Rabinowitz et al. never disclose of such accessing a criterion by which to statistically analyze the predicted transfer function. But, Tagami et al. disclose of a system wherein the similar concept of accessing a criterion by which to statistically analyze a signal (fig.3-4; col.7 line 50-67; col.8 line 17-53/the equalized audio function is analyzed using variations of criterion as noted in the figures) so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the prior art with implementing such accessing a criterion by which to statistically analyze the predicted signal so as to easily enable a listener to determine how to adjust the equalizer in obtaining desired sound quality in short-time span for the transfer function.

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, would have further teach of such statistically analyzing the transfer function using the criterion (fig.3-5) and selecting a

configuration based on the statistical analysis to improve for the criterion at the at least two of the plurality of listening positions (par [0033]/the configuration being selected include the speaker change and remodeling configuration and replacing component) and wherein the statistical analysis is selected from the group consisting of mean variance, standard deviation (fig.4; col.7 line 34-41; col.10 line 25-30; col.14 line 10-20/from the plurality of input sound, statistical analysis is made which consist of mean variance and standard deviation).

Similarly, it would have been obvious for one of the ordinary skill in the art to have tried in modifying such standard deviation and variance as further including such a mean spatial standard and spatial variance deviation for the same benefit so as to determine the average value and variance value for the respective speaker position in determining the sound quality value.

Similarly Re claim 12; 26; 110 have been analyzed and rejected with respect to claim 11.

Re claim 13, the audio system of claim 12, the combined teaching of Rabinowitz et al. and Tagami et al. as a whole, as modified would have further teach of such wherein the mean spatial variance is based on an average of spatial variance across the listening positions for a

plurality of frequencies (Rab; fig.3 (20); par [0027, 0029]/signals across many listening positions for a plurality of frequencies).

Re claims 21-23 have been analyzed and rejected with respect to claim 11-13.

Re claims 55-56 have been analyzed and rejected with respect to claim 12-13.

Re claim 57, the method of claim 27, where the statistical analysis indicate the predicted transfer functions. But, Rabinowitz fail to disclose of the specific indicating flatness of the transfer function. But, it would have been obvious for one of the ordinary skills in the art to have such transfer function as further modified to indicate flatness of the transfer function so to determine the smoothness and thus improved equalized audio signal.

Re claim 58, the method of claim 27, wherein the statistical analysis, is selected from the group consisting of standard deviation of the average (col.7 line 33-40; col.8 line 35-50).

Similarly, it would have been obvious to have tried in modified such standard deviation as specifically being standard deviation of the spatial average so as to analyzed the correlation coefficient for the respective loudspeaker location in determining the sound quality.

Re claim 59, the method of claim 27, where the statistical analysis is selected from the group consisting of amplitude variance and amplitude standard deviation (col.7 line 33-40; col.8 line 35-50).

RE claim 60, the method of claim 27, where the statistical analysis indicates differences in overall sound pressure level among the plurality of listening positions for the predicted transfer functions (fig.3 (20); par [0027; 0031]/include difference among the listening positions).

Re claim 61, the method of claim 27, where the statistical analysis is selected from the group consisting of variance of mean levels; standard deviation of mean levels (col.7 line 33-42).

Re claim 74, the method of claim 27, where the statistical analysis comprises mean overall level (col.7 line 33-42; col.16 line 10-35).

RE claim 78, the method of claim 77, where a plurality of statistical analyses are performed; and where selecting a configuration is based on weighting the plurality of statistical analyses (col.7 line 35-40/the summation of the frequency signal).

Re claim 79, the method of claim 27, where the statistical analysis ranks the predicted transfer functions based on at least one metric (Tag; fig.3-4/rank based on a value metric), thus, the combined teaching of Rabinowitz et al. and Tagami et al. as a whole, would have further incorporating of such selecting a configuration comprises

selecting a configuration based on the ranking (par [0029, 0033]/the different configuration).

Re claim 80, the method of claim 79, wherein selecting a configuration based on the ranking (fig.3-4). Similarly I would have been obvious for one of the ordinary skills in the art to have tried in having such ranking with further comprises selecting an optimal value based on a highest ranked predicted transfer function so as to select the optimal quality sound signal as desired.

Similarly Re claims 91-93 have been analyzed and rejected with respect to claims 57; 11-12.

Re claim 94, the machine readable medium of claim 81, where the statistical analysis indicates how much equalization is necessary for the predicted transfer functions (col.1 line 45-51; col.7 line 15-20; col.8 line 40-53/equalization for the sound signal).

Similarly Re claim 95, 97 has been analyzed and rejected with respect to claim 21, 92.

Re claim 100, the machine readable medium of claim 81, where the statistical analysis comprises mean overall level (col.7 line 33-42).

Similarly Re claims 102-104 has been analyzed and rejected with respect to claims 78-80.

Similarly Re claim 118 has been analyzed and rejected with respect to claim 57.

Re claim 121, the audio system of claim 1, where the criterion is selected from the group consisting of flatness, consistency, efficiency, and smoothness (fig.3-4/sound quality adjectives as in efficiency/consistency).

Re claim 122, the audio system of claim 1, where the statistical analysis comprises variance of level (col.7 line 35-42; col.16 line 15-40.

Similarly the combined teaching of Rabinowitz et al. and Tagami et al. as a whole, would have further disclose of such variance across the at least two of the plurality of listening positions(fig.3; par [0027]/analyzed signal for plurality of listening positions).

Re claim 123, the audio system of claim 122, similarly, it would have been obvious for one of the ordinary skills in the art to have modified such variance with further implementing having the variance comprises spatial variance across the at least two of the plurality of

listening positions so as to determined the quality of sound signal as per loudspeaker location.

Similarly, Re claims ({124-126}; {127-129}); {130-132}; {133-135}) have been analyzed and rejected with respect to claims 121-123.

5. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rabinowitz et al. ("2003/0179891") and Tagami et al. (US 5,745,586) and Greenberger (US 5,870,484).

Re claim 45, the method of claim 44, wherein having the potential type of loudspeakers, but, the combined teaching of Rabinowitz and Tagami et al. as a whole, fail to disclose of wherein the types of loudspeakers comprise a dipole and monopole loudspeakers. But, Greenberger disclose of the similar concept of wherein the types of loudspeakers comprise a dipole and monopole loudspeakers (col.2 line 55-67; col.15 line 35-50) so as to vary the radiation pattern of the output device. Thus, it would have been obvious for one of the ordinary skills in the art to have modified the prior art with implementing the types of loudspeakers comprise a dipole and monopole loudspeakers so as to vary the radiation pattern of the output device.

6. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rabinowitz et al. ("2003/0179891") and Tagami et al. (US 5,745,586) and Norris et al. (US 6,611,603).

Re claim 31, the method of claim 30, but, the combined teaching of Rabinowitz et al. and Tagami et al. as a whole, fail to disclose of wherein the transfer function measures amplitude and phase at a single frequency or multiple frequencies.

But, Norris et al. disclose of a system wherein the similar concept of having such transfer function measures amplitude and phase at a single frequency or multiple frequencies (fig.5-9 col. 4 line 35-50) so as to accurately approximate the transfer function in certain frequency bands during localization. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the prior art with incorporating the transfer function measures amplitude and phase at a single frequency or multiple frequencies so as to accurately approximate the transfer function in certain frequency bands during localization.

7. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rabinowitz et al. ("2003/0179891") and Tagami et al. (US 5,745,586) and Kim (US 5,717, 465).

Re claim 67, the method of claim 66, wherein the acoustic efficiency comprise a mean overall level, but, the combined teaching of Rabinowitz et al. and Tagami et al. as a whole, fail to disclose of such mean overall level divided by a total drive level for the transfer function.

But, Kim disclose of a system wherein having such mean overall level divided by a total drive level (col.5 line 5-15; col.6 line 10-25) so as to determine the improve efficiency of the signal.

Thus, it would have been obvious for one of the ordinary skills in the art to have modified the prior art with implementing the mean overall level divided by a total drive level so as to determine the improve efficiency of the signal.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DISLER PAUL whose telephone number is (571)270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Art Unit: 2614

/Devona E. Faulk/

Primary Examiner, Art Unit 2614